

6.0 What is Claimed is:

1 1. A spinal spacer for engagement between vertebrae, comprising:
2 a body formed of a bone composition and including a first end, an opposite second end, a superior
3 face defining a superior vertebral engaging surface and an inferior face defining an inferior vertebral
4 engaging surface; and
5 at least one of said vertebral engaging surfaces defining a first set of migration resistance grooves,
6 each of said grooves including a first face defining an angle of no more than about 90 degrees
7 relative to said one of said engaging surfaces and a second opposing sloped face, said first and
8 second faces defining a substantially arcuate pocket therebetween for trapping vertebral bone.

1 2. The spacer of claim 1 wherein said grooves of said first set are arranged in series.

1 3. The spacer of claim 2 wherein each of said sloped faces is sloped toward said first end.

1 4. The spacer of claim 1 wherein said at least one of said vertebral engaging surfaces defines a
2 peak between each of said grooves, said peak defining a flattened surface.

1 5. The spacer of claim 3 further comprising a second set of migration resistance grooves
2 defined in series in at least one of said vertebral engaging surfaces, each of said grooves of said
3 second set including a first face defining an angle of no more than about 90 degrees relative to said
4 one of said engaging surfaces and a second opposing sloped face, said first and second faces of each
5 of said grooves of said second set defining a pocket therebetween for trapping vertebral bone, each
6 of said sloped faces of said second set sloping towards said second end.

1 6. The spacer of claim 5 wherein each of said grooves has a depth below said at least one of
2 said vertebral engaging surfaces and said grooves of said first set are deeper than said grooves of
3 said second set.

no hole

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1 7. The spacer of claim 5 wherein each of said grooves has a depth below said at least one of
2 said vertebral engaging surfaces and said grooves of said second set are deeper than said grooves of
3 said first set.

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1 8. The spacer of claim 1 wherein the pocket defined by said first and second faces is circularly
2 rounded.

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1 9. The spacer of claim 1 wherein said first face is perpendicular to said at least one of said
2 vertebral engaging surfaces.

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1 10. The spacer of claim 1 further comprising a cutting edge between said first face and said at
2 least one of said vertebral engaging surfaces.

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1 11. The spacer of claim 4 wherein said first face at said pocket has a first height which is taller
2 than a second height of said second face at said pocket, and said peak is sloped.

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1 12. The spacer of claim 1 wherein said superior face defines a first opening and said inferior face
2 defines a second opening, each of said openings in communication with a chamber formed through
3 said body.

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1 13. The spacer of claim 12 wherein said first end defines a convexly curved surface.

2
1 14. The spacer of claim 13 wherein said second end is flat.

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1 15. A hollow spinal spacer for engagement between vertebrae, comprising:
2 a body formed of bone composition and including an anterior wall with opposite ends and defining a
3 convexly curved anterior surface, an opposite posterior wall having opposite ends and defining a flat
4 posterior surface, two lateral walls, each integrally connected between said opposite ends of said
5 anterior and posterior walls to define a chamber, said walls further defining a superior vertebral
6 engaging surface defining a first opening, said first opening in communication with said chamber,

7 and an inferior vertebral engaging surface defining a second opening, said second opening in
8 communication with said chamber; and
9 at least one of said vertebral engaging faces defining a set of migration resistance grooves, each of
10 said grooves including a first face defining an angle of no more than about 90 degrees relative to
11 said one of said engaging surfaces and a second opposing sloped face, said first and second faces
12 defining a substantially arcuate pocket therebetween for trapping vertebral bone, said grooves in
13 series with said sloped faces sloping towards said anterior wall.
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1 16. A spinal spacer for engagement between vertebrae, comprising:

1 a body formed of a bone composition and including a first end, an opposite second end, a superior
2 face defining a superior vertebral engaging surface and an inferior face defining an inferior vertebral
3 engaging surface; and
4 at least one of said vertebral engaging surfaces defining a first set of migration resistance grooves,
5 each of said grooves including a first face defining an angle of no more than about 90 degrees
6 relative to said one of said engaging surfaces and a second opposing sloped face, said first and
7 second faces defining a pocket therebetween for trapping vertebral bone, said one of said engaging
8 surfaces defining a peak between each of said grooves, said peak defining a flattened surface.
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1 17. The spacer of claim 16 further comprising a cutting edge between said first face and said at
2 least one of said vertebral engaging surfaces.
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1 18. The spacer of claim 16 wherein said first face at said pocket has a first height which is taller
2 than a second height of said second face at said pocket, and said peak is sloped.
3

1 19. The spacer of claim 16 wherein said first face is perpendicular to said at least one of said
2 vertebral engaging surfaces.
3

1 20. A spinal spacer for engagement between vertebrae, comprising:

2 a body formed of a bone composition and including a first end, an opposite second end, a superior
3 face defining a superior vertebral engaging surface and an inferior face defining an inferior vertebral

engaging surface; and

at least one of said vertebral engaging surfaces defining a first set of migration resistance grooves, said at least one of said vertebral engaging surfaces defining a second set of migration resistance grooves, each of said grooves including a first face defining an angle of no more than about 90 degrees relative to said one of said engaging surfaces and a second opposing sloped face, said first and second faces defining a pocket therebetween for trapping vertebral bone, each of said sloped faces of said grooves of said first set sloping toward said first end, each of said sloped faces of said grooves of said second set sloping toward said second end.

21. The spacer of claim 20 wherein each of said grooves has a depth below said at least one of said vertebral engaging surfaces and said grooves of said first set are deeper than said grooves of said second set.

22. The spacer of claim 20 wherein each of said grooves has a depth below said at least one of said vertebral engaging surfaces and said grooves of said second set are deeper than said grooves of said first set.

23. The spacer of claim 20 wherein said at least one of said vertebral engaging surfaces defines a peak between each of said grooves, said peak defining a flattened surface.

24. The spacer of claim 23 wherein said first face at said pocket has a first height which is taller than a second height of said second face at said pocket, and said peak is sloped.

25. A spinal spacer consisting substantially of cortical bone, a top face, a bottom face, a canal surrounded by a continuous or discontinuous wall of cortical bone comprising a canal surrounded by convexly curved anterior cortical bone face and three substantially rectilinear cortical bone faces unitary with said convexly curved anterior cortical bone face.

26. The implant of claim 25 which has a substantially "D"-shaped external profile.

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1 27. The implant of claim 26 wherein said canal has a substantially "D"-shape.

1 28. The implant of claim 25 further having an external feature on said top face, said bottom face
2 or both.

1 29. A method of making at least one implant consisting substantially of cortical bone, said
2 implant comprising a canal surrounded by a continuous or discontinuous wall of cortical bone
3 having a top face and a bottom face, each of which is substantially planar, with said planes being
4 substantially parallel to each other, said method comprising:

- 5 (a) obtaining a plug of bone consisting substantially of cortical bone by using a core cutter
6 having a central drill bit, thereby forming a canal through the bone plug obtained with
7 the core cutter;
8 (b) machining the bone plug of step (a) to produce a "washer-shaped" bone plug;
9 (c) machining the canal through the bone plug to form an asymmetric shape therein; and
10 (d) using said asymmetric shape to machine an outside profile of the bone plug.

1 30. A method of making at least one implant consisting substantially of cortical bone, said
2 implant comprising a canal surrounded by a continuous or discontinuous wall of cortical bone
3 having a top face and a bottom face, each of which is substantially planar, with said planes being
4 substantially parallel to each other, said method comprising:

- 5 (a) cutting a segment of cortical bone;
6 (b) shaping said segment of cortical bone into a symmetric half of the final shape of said
7 implant comprising a canal surrounded by a continuous or discontinuous wall of cortical
8 bone, such that when implanted in juxtaposition with a mirror image segment, an implant
9 is formed having a circular, an elliptical, or an asymmetric shape, a top face and a bottom
10 face, each of which is substantially planar, with said planes being substantially parallel to
11 each other; and
12 (c) cutting appropriate lengths of said shaped segment of cortical bone such that said cut
13 length provides half of an implant having a desired height.

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1 31. A method for inducing fusion of cervical vertebrae which comprises removing a portion of
2 the intervertebral disc between the adjacent vertebrae that are to be fused, and inserting into said
3 space at least one implant consisting substantially of cortical bone, said implant comprising a canal
4 surrounded by a continuous or discontinuous wall of cortical bone having a top face and a bottom
5 face, each of which is substantially planar, with said planes being substantially parallel to each
6 other.

1 32. An implant consisting substantially of cortical bone, said implant having been prepared by a
2 process comprising:

- 3 (a) obtaining a plug of bone consisting substantially of cortical bone by using a core cutter
4 having a central drill bit, thereby forming a canal through the bone plug obtained with
5 the core cutter;
6 (b) machining the bone plug of step (a) to produce a "washer-shaped" bone plug;
7 (c) machining the canal through the bone plug to form an asymmetric shape therein; and
8 (d) using said asymmetric shape to machine an outside profile of the bone plug.
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